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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/091,711      | 03/05/2002  | Sadaaki Mori         | 4970/0K363          | 7464             |

7590 09/30/2003  
DARBY & DARBY  
PROFESSIONAL CORPORATION  
805 THIRD AVENUE  
NEW YORK, NY 10022-7513

EXAMINER

LUM, LEE S

ART UNIT PAPER NUMBER

3611

DATE MAILED: 09/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

SW

## Office Action Summary

Application No.

10/091,711

Applicant(s)

MORI ET AL.

Examiner

Lee Lum

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 July 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

1. An Amendment was filed 7/11/03.
2. The Abstract is objected to because in line 1, "comprises" should be replaced by a non-legal term.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

**Claims 1-16** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In Claims 1 and 9, "rotational speed of the motor" lacks sufficient structure, i.e.; the Claims lack a speed sensor.

In Claims 2 and 10, the language "plates which are laminated..." does not appear relevant to the subsequent "so that recesses fit shapes of the permanent magnets" (emphasis added). That is, it is unclear what relevance "laminat[ion]" has to "fit shapes of the magnets".

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4A. As best understood, **Claims 1 and 9** are rejected under 35 U.S.C. 103(a) as being unpatentable over Henry et al 6373211 in view of Coles et al 6124688.

As best understood, Henry discloses an electric power steering apparatus (fig 6) comprising

Torque sensor 73,

Steering assist motor 64 driven to rotate based on the detected torque (col 8, lines 20-27),

Drive circuit (unidentified) for the motor,

Judgement unit 62 to determine whether the rotational speed of the motor is within a predetermined range (col 8, lines 20-27), and,

Instruction unit 62 for supplying field-weakening control of the motor to the drive circuit, when it is judged that the speed of the motor is within the range (same, and col 11, lines 11-20).

The reference discloses a brushless motor with rotor and magnets, but does not disclose magnets embedded in recesses in the rotor core. Coles shows recessed magnets 27 in rotor 26 in fig 12, and col 6, lines 40-41. While Henry's configuration is clearly functionally equivalent, it would have been obvious to one with ordinary skill in the art at the time the invention was made to include an alternate arrangement, as shown in Coles, to provide the same functions for different applications.

4B. As best understood, re **Claims 2 and 10** are rejected under 35 U.S.C. 103(a) as being unpatentable over Henry in view of Coles, and in further view of prior art disclosed in the present application.

Coles shows the rotor 26 as comprising recessed magnets 27, but does not show the rotor core as including laminated electromagnetic plates. In the present application, the spec, on p 2, middle paragraph, provides this feature as prior art, as does fig 1. It would have been obvious to one with ordinary skill in the art at the time the invention was made to include this feature, as shown in prior art, as a functionally equivalent rotor configuration, having a compact yet effective structure.

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5. **Claims 3-8 and 11-16** would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Prior art does not disclose an electric power steering apparatus comprising, *inter alia*, a brushless motor controlled by controlling a phase of a motor current which is controlled with a PWM-controlled pulse signal,

a judgement unit for determining whether the speed of the motor is within a predetermined range, and

the range is where a root-mean-square value of an alternating signal corresponding to the pulse signal is between 90 and 100 of a maximum root-mean-square value, and where phase control is not performed.

6. The prior art made of record, and not relied upon, is pertinent to this disclosure: Miller et al 5257828, Miller 5740880.

7. RESPONSE TO REMARKS

New art rejections have been provided above. It is maintained that Coles, in combination with Henry, shows the relevant elements as indicated.

With respect to unresolved 112 rejections, Applicant's remarks fail to rectify the particular issues. Re Claims 1 and 9, Examiner reiterates a speed sensor is lacking because functional language is provided without specifying this required element: "a judgment unit for judging whether a rotational speed of the motor is within a predetermined range". Applicant's remarks on p 11, "Clearly, this function involves sensing speed. There is therefore a speed sensor present in the claim...", are unclear because this element IS NOT RECITED. (Neither do the claims imply inclusion of this component - these are not method claims in which elements may be implied by functional language) Amendment is required.

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With regards to Claims 2 and 10, it is maintained that the following language is unclear – “plates which are laminated”. This language is irrelevant to the subsequent “so that recesses fit shapes of the...magnets”. Applicant is also asked to refer to the relevant portion of the spec, p 11, lines 13-23. As best understood, this description does not provide a correspondence between “laminated plates” and “recesses fit[ting] shapes of the magnets”. Amendment is required.

8. Communication with the Examiner and USPTO

Any inquiry concerning this communication should be directed to Ms. Lum at (703) 305-0232, M-F, 9-6. Our fax number is (703) 872-9306. Any inquiry of a general nature, or relating to the status of this application/proceeding, should be directed to Customer Assistance at (703) 306-5771.

Ms. Lee S. Lum  
Examiner  
9/15/03

A handwritten signature in black ink, appearing to be 'Lum', written over a faint circular stamp.